Section 2

Student Internships and Co-ops

Supported by the
Department of Energy
Office of Defense Programs

Student Programs: Internships and Cooperative Educational Experiences

Program Description

FY01 brought about many interesting challenges and changes for Science and Technology Base Programs—Education Programs Office (STB-EPO). The Education Programs Office was given institutional and programmatic oversight of student programs which consist of the High School Co-operative, Undergraduate, Graduate and College Co-operative education programs. Along with the programmatic transition was the addition of a newly created position, the Laboratory Student/Mentor Liaison. One of the primary objectives of this new team is to plan, prepare, and provide student participants with a quality and rewarding work experience. This team partners with internal and external resources including mentors, student liaisons, students, management, and the community. Information/feedback about student-related experiences and issues are being collected and tracked. This data will be utilized for further marketing and outreach efforts to help attract and retain student program participants, which is a primary institutional goal of the Laboratory. The data will also be used to conduct lessons learned and formulate process improvements. STB-EPO also oversees the Student Association and works directly with the Student Programs Advisory Council (SPAC). The Laboratory had approximately 1,500 students during summer 2001. This number is expected to increase to 1,600 in summer 2002. (See Chart 4.)

Students by Month

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
HS	**72**	**75**	76	77	79	80	81	72	59	66	71	75
UGS	827	827	818	818	806	796	779	848	770	930	919	905
GRA	333	324	319	318	320	311	311	364	379	391	369	362
Total	1232	1226	1213	1204	1205	1187	1171	1284	1354	1387	1359	1342

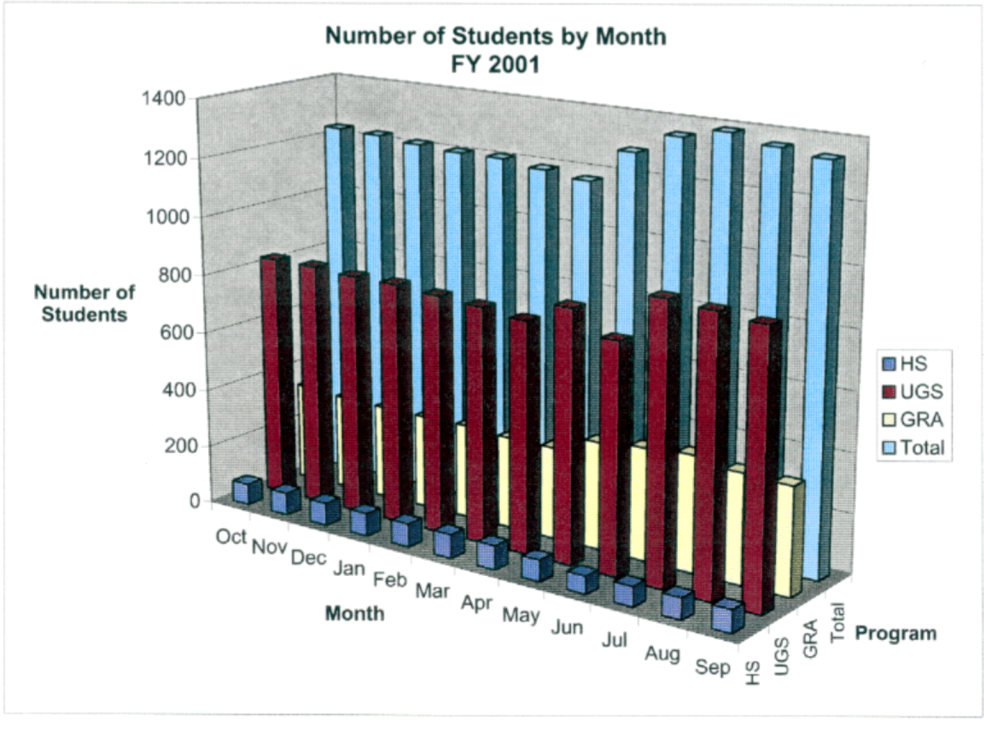

Chart 4. LANL student population.

University of Colorado at Boulder Formative Evaluation

Along with the transition of student programs came a formative evaluation that was conducted by the University of Colorado at Boulder. The focus of the evaluation was student internship programs. The information provided feedback to student programs staff, partners, and participants on the efficacy of many aspects of student programs, as they are perceived by three years of interns (1998–2000). The report findings came from Student Programs Advisory Council and the Continuous Quality Improvement (CQI) Committee minutes, student survey data, intern write-in comments from student surveys, and interviews with undergraduate and graduate program interns. The evaluation findings have been useful in guiding student program staff about needed program and design changes as well as the need to implement an evaluation tool to monitor the impact of program changes. A triangulated method was used, gathering quantitative and qualitative findings as well as quotations from the interview data. This evaluation has been an important tool and has been a valuable guide for this new team. The team has focused on making data-driven decisions and changes when addressing program needs.

High School Co-operative Program

Qualified high school seniors are provided the opportunity to develop skills and gain work experience, while receiving exposure to a variety of technical and administrative career fields. As an educational program, it is designed to complement the students' education with work experience related to their chosen fields of study while assisting them with the school-to-work transition. The participating high schools establish eligibility criteria for students to receive credit and screen the students for aptitudes and interests, grade point average, and number of credits toward graduation. Students who are from other area high schools or alternative schooling are also encouraged to apply with their guidance counselor's approval. Participants have the opportunity to work full time during the summer between the junior and senior year, and may continue the appointment in part-time status during the academic year. Scheduled campus visits and presentations are conducted each spring and fall in an effort to continue successful recruitment of eligible students, as evidenced by the number of applicants selected for the year. Currently, students from 10 area high schools participate in the program. The total number of high school students participating in FY01 increased from previous years. There were approximately 143 total participants: 57% Hispanic, 1% Asian, 6% Native American, 30% White, and 6% that did not specify (see Chart 5). The growth and development of this precollege program will continue through enhanced recruitment with additional campuses to encourage northern New Mexico students to pursue their educational and academic achievements through access to learning opportunities within the Laboratory.

Undergraduate Program

The Undergraduate Student (UGS) Program consists of summer, part-time, and full-time appointments for undergraduate students. The educational program is year-round and provides students with relevant research experience while they are pursuing undergraduate degrees. Eligibility is limited to those students who have completed high school and are admitted and in active status in an undergraduate program. Appointments are available both in the technical and administrative fields for 90-day summer internships with the option to continue working part-time during the academic year. Maximum years in the program are six years for those pursuing a bachelor's degree and three years maximum for those pursuing an associate degree. There is also the post baccalaureate category of the UGS program that offers college graduates the opportunity to participate in the program a maximum of one year after graduation. This category applies to those students who

Number of High School Co-Op Students

	N Am	As Am	Black	Hispanic	White	Other
Female	3	0	0	67	18	2
Male	5	2	0	14	25	6
Total	8	2	0	81	43	8

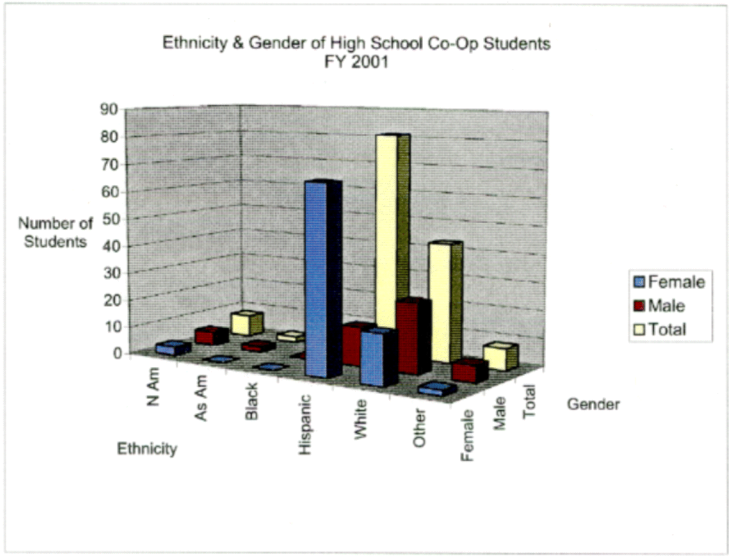

Chart 5. High school distribution.

have been awarded a bachelor's degree but have not yet been accepted and enrolled in a graduate program. Post baccalaureate students are encouraged to take class(es) during this year and may move into graduate status when documentation is provided indicating acceptance and enrollment into a graduate program.

Currently, students from 1203 colleges and universities participate in the UGS Program. During FY01 2,063 UGS applications were received. Of these, approximately 1,211 were selected for internships with a composition of 39% Hispanic, 3% Asian, 3% Native American, 1% Black, 48% White, and 5% did not specify (see Chart 6). There were 16 undergraduate student conversions to Laboratory staff positions; 63% were Hispanic, 6% Native American, and 31% White participants (see Chart 7). Students with unique skills and qualifications may be converted to both technical and administrative Laboratory staff positions. The strategic recruiting effort to help increase the diversity of Los Alamos National Laboratory's entry level work force pool continued in FY01, by developing partnerships and creating programs with various campuses throughout the nation.

The number of students participating in internships has fluctuated over the last four years.

In 1998, there were 1,445 students: 6% HS Co-op, 62% UGS, and 32% Graduate Research Assistants (GRAs).

1999 saw a slight 6% drop to 1,355 resulting in 5% HS Co-op, 67% UGS, and 28% GRAs.

In 2000, there was an additional 9% drop due to the fire, to 1,238 resulting in 5% HS Co-op, 67% UGS, and 27% GRAs.

In contrast, FY 2001 saw a 33% surge overall, to a total of 1859 students: 8% were HS Co-op, 65% were UGS, and 27% were GRAs.

Despite the variation in numbers, the overall percentages between categories appear to have remained relatively the same (see Charts 8 and 9).

Number of Undergraduate Students by Ethnicity

	N Am	As Am	Black	Hispanic	White	Other
Female	16	17	4	259	251	20
Male	18	18	14	221	333	40
Total	34	35	18	480	584	60

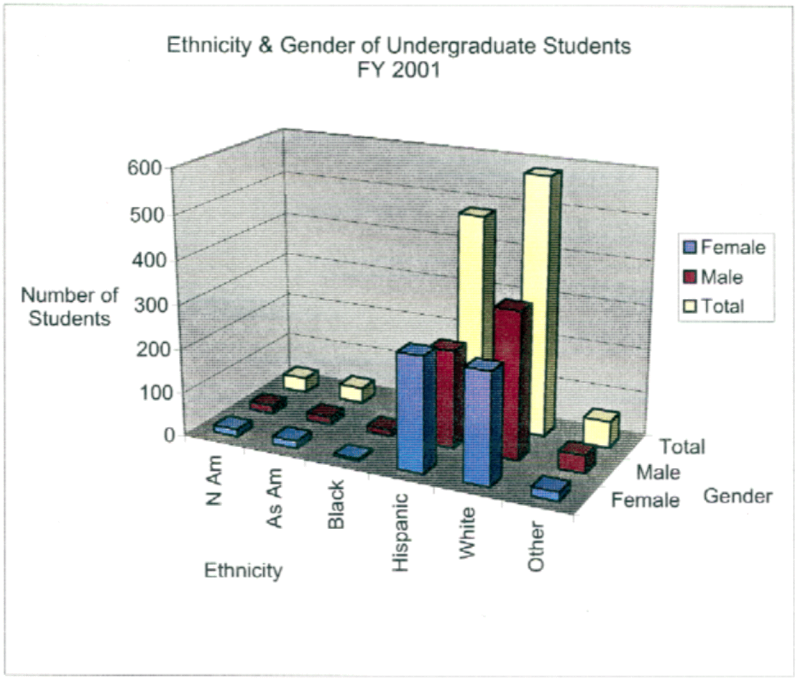

Chart 6. Undergraduate distribution.

Students Converted

	Hispanic	NA	White	Other
GRA	**5**	**1**	**11**	**2**
UGS	**10**	**1**	**5**	
Total	**15**	**2**	**16**	**2**

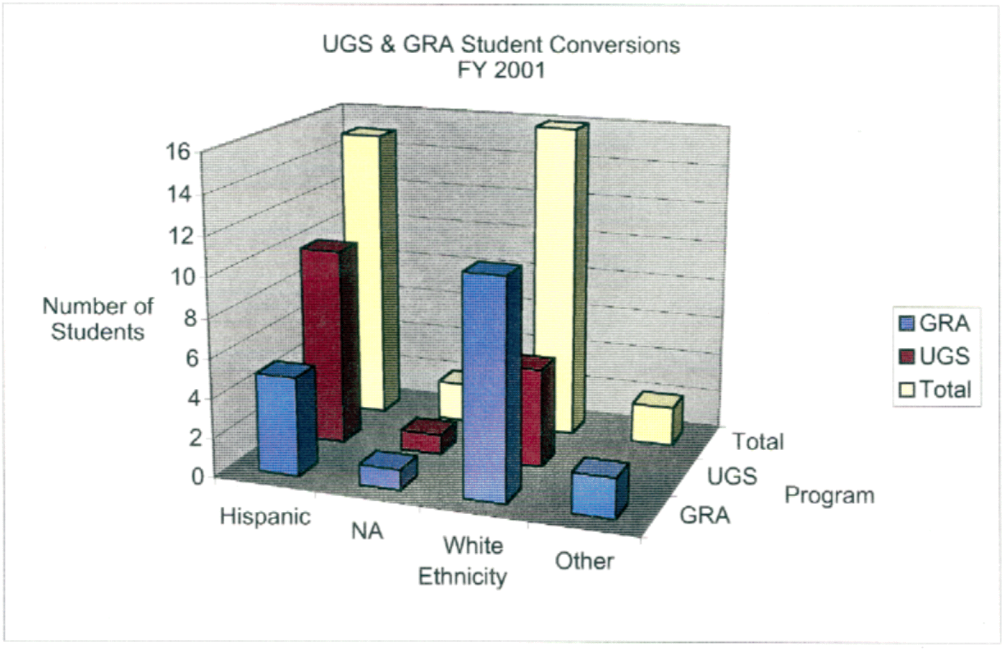

Chart 7. Undergraduate and graduate conversions.

Four Year Trend

	1998	1999	2000	2001
HS	**88**	**68**	**66**	**143**
UGS	**896**	**904**	**832**	**1,211**
GRA	**461**	**383**	**340**	**499**
Total	**1,445**	**1,355**	**1,238**	**1,853**

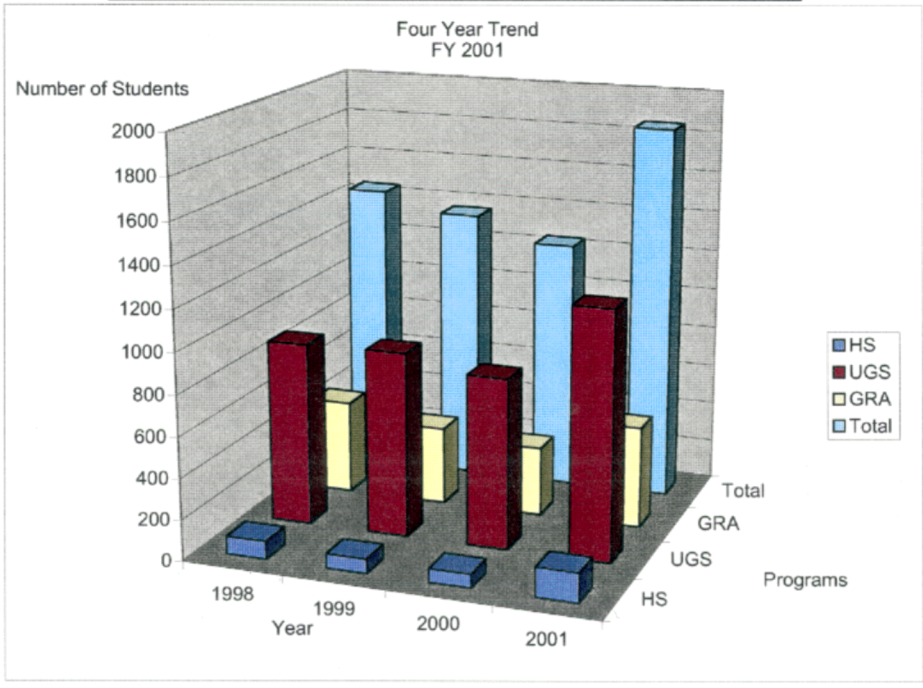

Chart 8. Type of appointment by reporting period.

Number of Graduate Research Assistants

	N Am	As Am	Black	Hispanic	White	Other
Female	5	19	7	25	97	12
Male	2	37	8	26	227	37
Total	7	56	15	51	324	49

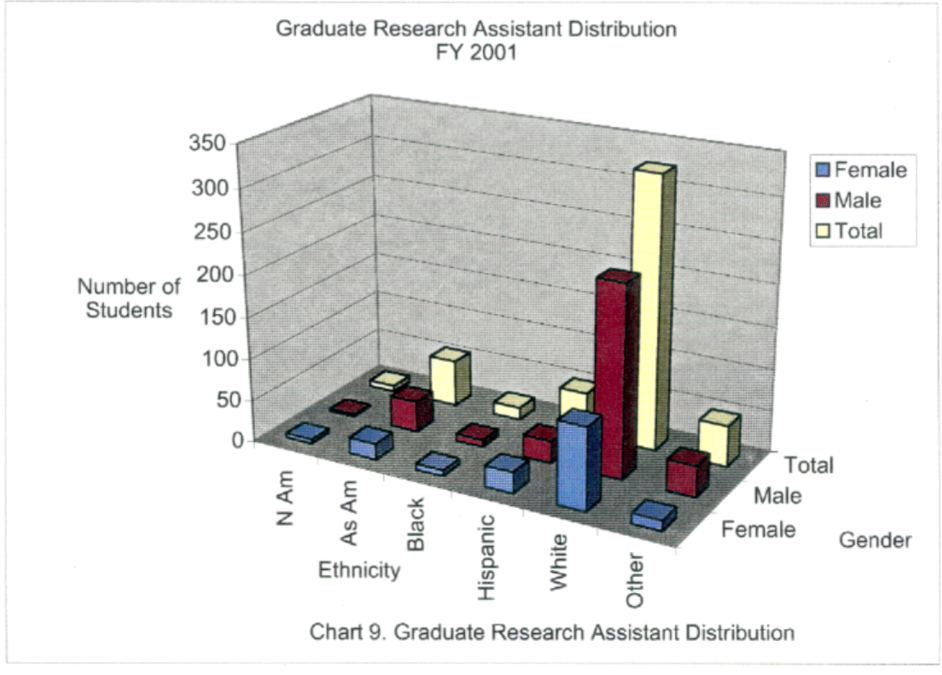

Chart 9. GRA distribution.

Graduate Research Program Description

The Graduate Research Assistant (GRA) Program is a year-round educational program that provides students with relevant research experience while they are pursuing a graduate degree program. Los Alamos National Laboratory appoints graduate students from across the world to experience the unique internships in basic and applied research work at Los Alamos. Currently, students from 168 colleges and universities participate in the GRA Program. To qualify, candidates must have proof of good academic standing from their institution, must hold a bachelor's degree, and must be actively enrolled in a graduate program. Appointments are available both in the technical and administrative fields for 90-day summer internships with the option to continue working part-time during the academic year. The maximum number of years allowed in the program is dependent on the type of degree held and the type of graduate degree being pursued. Students are selected on the basis of field of study, academic standing with their institution, and research interests.

During FY01, 584 applications were received. Of these, approximately 506 were selected for internships with a composition of 39% Hispanic, 3% Asian, 3% Native American, 1% Black, 48% White, and 5% did not specify (see Chart 6). There were 19 graduate student conversions; 26% were Hispanic, 5% Native American, 58% White, and 11% did not specify (see Chart 8). Students with unique skills and qualifications may be converted to both technical and administrative Laboratory staff positions. The effort to help increase the diversity of Los Alamos National Laboratory's entry level work force pool continued, with focused and strategic student recruitment at various campuses throughout the nation.

Student Program Highlights

Among the many activities/functions that were held were mentor training; student liaison training; new student orientation; a weekly electronic newsletter for mentors and liaisons; tracking of student work plans; the All-Student Picnic with a LANL Information Fair (Fig. 18); a bi-weekly Student Breakfast Seminar for students; coordination of All Student Meetings with the Student Programs Advisory Council (SPAC). Bill Press, Deputy Director, and John Browne, Laboratory Director, assisted with the coordination of the first annual Symposium (Fig. 19) and oversight and advisement of the Student Association. Other activities/initiatives include the Student Postings Initiative, an international gathering for graduate students (Fig. 20), student discount cards, and the Distinguished Student Performance Awards. The following information details programmatic information.

Student Breakfast Seminar

This was a pilot year for the Student Breakfast Seminar. The intent of the seminars was three-

Figure 18. Student picnic.

Figure 19. Symposium awards.

Figure 20. International gathering. GRA Program Coordinator Kari Lier talks with graduate student Andreas Rechtsteiner at the Graduate Student Gathering hosted by STB-EPO. Inset photo, Anh Trinh Nguyen is dressed in her native dress. Ms.Nguyen was a guest of a student participant.

fold: to bring the students together on a regular basis to learn about LANL resources, a means of providing ongoing feedback to student programs, and the opportunity for students to socialize. The breakfasts were held every other Thursday morning. Each session began with a brief presentation about LANL resources i.e., Research Library, safety and security, Human Resources, etc. Questions and comments were then submitted by students regarding their concerns and/or needs, and the remaining time was spent with the students socializing with each other. The attendance averaged 15 students. The students who attended enjoyed the sessions and found them to be helpful in learning more about the Laboratory. The students suggested that the mentors or the Laboratory support them by paying for their breakfasts. The breakfast seminars will continue next year, and an effort will be made to seek sponsorship by various Laboratory organizations to pay for the refreshments.

All Student Picnic with Information Fair

The All-Student Picnic with the Information Fair was held June 7, at Urban Park. EPO hosted the picnic that previously has been sponsored by the Student Association. The addition of the Information Fair was well received at the picnic. Various Laboratory organizations and partners included the Ombudsman Office, Wellness Center, Community Relations Office, LANL Foundation, Human Resources, Housing Office, Environment Safety and Health-2 and the Research Library; all staffed booths provided students with information about their respective organizations. During the event, the Community Relations Office distributed community-sponsored discount cards to students. EPO staff served food to over 700 students, mentors and liaisons. The students praised the Information Fair and found it useful in learning more about the Laboratory.

Proactive All Student Meetings

Three all-student meetings were held: with the Student Programs Advisory Council (SPAC) on June 21, 2001; John Browne, Laboratory Director, on July 11, 2001; and Bill Press, Deputy Director Science and Technology on August 7, 2001. The meetings were held to address student concerns and issues regarding the Laboratory and

the community. Each meeting began with a brief presentation about the importance and value of students followed by questions from students. Each meeting was well attended. The issues addressed focused primarily on student housing, transportation, lack of social life after work hours, and the cost of living. As a result of these meetings, many committees and sub-committees have developed to improve the overall student experience.

Student Association

Reviving and redefining the Student Association was a primary goal for Summer 2001. Student elections were held, new members were named, a new charter was implemented, and the organization began to recreate itself. The need to redefine the Student Association became necessary, as attendance and participation had dropped to a degree where the Student Association was virtually nonexistent. The Student Association was mentored and guided by EPO and SPAC. The new Student Association has worked diligently to meet student needs by implementing a new student information list service, creating a new Website, and by sponsoring activities that create more visibility for the organization and are more in line with all student needs. Various committees are in place to address student issues and to prepare for fiscal year 2002. A great amount of attention is being given to students who continue to work with the Laboratory year-round. Communication is a primary focus for the new Student Association. As a result, representatives attend the biweekly meetings with SPAC and interact regularly with their advisors.

Symposium 2001

The Symposium was held on August 5–6, 2001, at the Santa Fe Community College. This year's first annual symposium had 101 UGS and GRA student and postdoctoral entries, with an additional 200 attendees. Thirty-four students presented formal technical papers (Fig. 19), 60 students presented posters, and seven participants were in the postdoctoral category. The categories represented included biology, chemistry, materials science, numerical analysis, environmental science, and physics. Laboratory technical staff, affiliates, retirees, and academic professionals judged the presentations. The intent of the Symposium and Career Fair was to broaden the students' and postdoctoral appointees' expertise and prepare them for careers in engineering and science. Sponsors commented favorably on the purpose, scheduling, and organization of the event. Students also commented favorably on the immediate feedback they received on their presentations.
The event was followed by an awards banquet at which Laboratory Director John Browne presented the awards.

GRA International Gathering

On July 17, 2001, the EPO hosted the first GRA International Gathering (Fig. 20). This function was designed to further diversity awareness and enhance communications among the GRA students. Over 60 students were in attendance. The participants represented France, Sweden, Germany, China, Japan, Canada, Nigeria, Colombia, Greece, Cuba, Mexico, Portugal, Romania, the Netherlands, and several others. Many of the students actually were from these countries, while others just represented a country with food and greetings.

Figure 21. Greg Day is an MST-6 graduate student, who received the Symposium 2001 Award for Overall Best Graduate Poster.